This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.   (Currently amended) A method of displaying physiological patient data from a cyclic physiological waveform, the method comprising the acts of:

acquiring physiological patient data from ~~the~~ a cyclic physiological waveform, the physiological patient data including a plurality of data points, each data point representing an amplitude of the physiological patient data;

assigning a first color to each data point having an amplitude in a first range;

assigning a second color to each data point having an amplitude in a second range;

assigning a third color to each data point having an amplitude in a third range, the first color, the second color, and the third color all being different colors; and

displaying the ~~physiological patient~~ data points in a colorized three dimensional representation.

2.   (Previously amended) A method as set forth in claim 1, wherein the physiological patient data is electrocardiogram data.

3.   (Previously amended) A method as set forth in claim 1, wherein the physiological patient data is blood pressure data.

4.   (Previously amended) A method as set forth in claim 1, wherein the physiological patient data is cardiac output data.

5.   (Previously amended) A method as set forth in claim 1, wherein the physiological patient data is pulse oximetry data.

6.   (Original) A method as set forth in claim 1, and further comprising the acts of storing the physiological patient data in a memory array.

7.   (Currently amended) A method as set forth in claim 6, <u>wherein the data points represent</u> <u>a plurality of waveforms, wherein each waveform represents at least one cycle of the cyclic</u> <u>physiological waveform, and</u> wherein the memory array is a waveform array.

8.   (Currently amended) A method as set forth in claim 1, and further comprising the acts of parsing the physiological patient data into a series of waveforms<u>, and wherein each waveform</u> <u>represents at least one cycle of the cyclic physiological waveform</u>.

9.   (Currently amended) A method as set forth in claim 8, wherein the series of waveforms are median waveforms<u>, and wherein each median waveform represents a plurality of cycles of</u> <u>the cyclic physiological waveform</u>.

10.   (Previously amended) A method as set forth in claim 8, wherein the act of displaying includes the act of plotting the parsed waveforms in a temporal alignment to allow detection of long term trends in the physiological patient data.

11.   (Currently amended) A method as set forth in claim 1, <u>and further comprising</u> ~~wherein~~ the act of ~~displaying further includes the act of~~ assigning a representative X coordinate, Y coordinate, and Z coordinate, to each data point ~~and the act of plotting each data point on the~~ ~~display to produce a three-dimensional representation~~.

12.   (Currently amended) A method as set forth in claim 1, further ~~including~~ <u>comprising</u> the act of parsing the data points into a series of median waveforms<u>, wherein each median waveform</u> <u>represents a plurality of cycles of the cyclic physiological waveform,</u> and wherein the act of displaying further includes the act of plotting the <u>median</u> waveforms in a temporal alignment.

13.   (Currently amended) A method as set forth in claim 1, wherein the ~~act of displaying~~ ~~further includes the act of color-coding the amplitude values of the data points in~~ <u>first range, the</u> <u>second range, and the third range are each within</u> a relevant range.

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14.   (Currently amended) A method as set forth in claim 13, wherein the relevant range is +0.5mV to ~~0.5mV~~ -0.5mV.

15.   (Currently amended) A method of displaying physiological patient data from a cyclic physiological waveform, the method comprising:

 acquiring physiological patient data from ~~the~~ a cyclic physiological waveform;

 storing the physiological patient data in a memory array; and

 displaying the physiological patient data in a <u>colorized</u> three dimensional representation, the act of displaying including the act of parsing the physiological patient data into a series of waveforms such that each successive waveform is plotted in a temporal alignment to allow detection of long term trends in the physiological patient data, the act of parsing each waveform into a series of successive data points such that each data point has a coordinate that is plotted on the display to produce a three dimensional representation, each successive data point having a discrete amplitude, ~~and the act of assigning a color according to the amplitude of the data point if the amplitude is within a relevant range~~ <u>the act of assigning a first color to each data point having an amplitude in a first range, the act of assigning a second color to each data point having an amplitude in a second range, and the act of assigning a third color to each data point having an amplitude in a third range, the first color, the second color, and the third color all being different colors</u>.

16.   (Original) A method as set forth in claim 15, wherein said physiological patient data is electrocardiogram data.

17.   (Previously amended) A method as set forth in claim 15, wherein the physiological patient data is blood pressure data.

18.   (Previously amended) A method as set forth in claim 15, wherein the physiological patient data is cardiac output data.

19.   (Previously amended) A method as set forth in claim 15, wherein the physiological patient data is pulse oximetry data.

20.   (Currently amended) A method as set forth in claim 15, <u>wherein each waveform represents at least one cycle of the cyclic physiological waveform, and</u> wherein the memory array is a waveform array.

21.   (Currently amended) A method as set forth in claim 15, wherein the series of waveforms are median waveforms<u>, and wherein each median waveform represents a plurality of cylces of the cyclic physiological waveform</u>.

22.   (Original) A method as set forth in claim 15, wherein the relevant range is +0.5mV to –0.5mV.

23.   (Currently amended) An apparatus for displaying physiological patient data from a cyclic physiological waveform, the apparatus comprising:
        a display; and
        a processor for producing a <u>colorized</u> three dimensional representation of physiological patient data from ~~the~~ <u>a</u> cyclic physiological waveform, the physiological patient data including a plurality of data points, each data point having an amplitude representing a value of a physiological parameter <u>and being assigned a first color when the amplitude is in a first range, a second color when the amplitude is in a second range, and a third color when the amplitude is in a third range, the first color, the second color, and the third color all being different colors</u>.

24.   (Previously amended) An apparatus as set forth in claim 23, and further comprising a patient monitoring device as the source of physiological patient data.

25.   (Previously amended) An apparatus as set forth in claim 24, wherein the patient monitoring device includes a transducer for acquiring the physiological patient data from a patient.

26.   (Original) An apparatus as set forth in claim 24, wherein the patient monitoring device is a Holter monitor.

27.   (Original) An apparatus as set forth in claim 24, wherein the patient monitoring device is a stress-testing monitor.

28.   (Original) An apparatus as set forth in claim 23, and further comprising a memory device connected to the processor.

29.   (Previously amended) An apparatus as set forth in claim 28, wherein the physiological patient data is stored in a memory array.

30.   (Currently amended) An apparatus as set forth in claim 29, wherein the data points represent a plurality of waveforms, wherein each waveform represents at least one cyclic physiological waveform, and wherein the memory array is a waveform array.

31.   (Currently amended) An apparatus as set forth in claim 23, wherein the display is a black and white display capable of displaying/generating shades of gray in between black and white, wherein the first color is a first shade of gray, wherein the second color is a second shade of gray, and wherein the third color is a third shade of gray.

32.   (Original) An apparatus as set forth in claim 23, wherein the display is a red-blue-green color display.

33.   (Currently amended) An apparatus as set forth in claim 23, wherein each data point is assigned an X, Y, Z coordinate, and wherein the display has a plurality of pixels for displaying the respective coordinates.

34.   (Original) An apparatus as set forth in claim 23, wherein the processor further comprises software for animation and walk through of three-dimensional representations.

35.   (Previously amended) An apparatus as set forth in claim 23, wherein the processor further comprises software to receive the physiological patient data.

36.   (Previously amended) An apparatus as set forth in claim 23, wherein the processor further comprises software to parse the physiological patient data.

37.   (Currently amended) An apparatus as set forth in claim 36, ~~where in~~ wherein the physiological patient data is parsed into a series of waveforms, and wherein each waveform represents at least one cycle of the cyclic physiological waveform.

38.   (Currently amended) An apparatus as set forth in claim 37, wherein the series of waveforms are median waveforms, and wherein each median waveform represents a plurality of cycles of the cyclic physiological waveform.

39.   (Original) An apparatus as set forth in claim 23, wherein the processor further comprises software to generate a waveform display on the display.

40.   (Original) An apparatus as set forth in claim 39, wherein the waveform display places the data points at respective pixels on the display.

41.   (Currently amended) A software program for generating a display of physiological patient data from a cyclic physiological waveform, the software program comprising:
  (a) a program module for acquiring physiological patient data from ~~the~~ a cyclic physiological waveform;
  (b) a program module for storing the physiological patient data in a memory array;
  (c) a program module for displaying a colorized three dimensional representation of the physiological patient data;
  (d) a program module for setting a current waveform to a first waveform in the memory array;
  (e) a program module for providing a Z coordinate counter and initializing the Z coordinate counter to zero;
  (f) a program module for providing a X coordinate counter and initializing the X coordinate counter to zero;

(g) a program module for providing a Y coordinate counter and initializing the Y coordinate counter to zero;

(h) a program module for ~~providing a~~ determining ~~the~~ <u>a</u> pixel color based on the Y coordinate of a data point<u>, the pixel color being a first color when the Y coordinate is in a first range, a second color when the Y coordinate is in a second range, and a third color when the Y coordinate is in a third range, the first color, the second color, and the third color all being different colors</u>;

(i) a program module for plotting a current data point of the current waveform at a current coordinate in the <u>pixel</u> color determined in (h);

(j) a program module for incrementing the X coordinate counter and repeating (h) and (i) until all data points in the current waveform are plotted; and

(k) a program module for incrementing the Z coordinate counter and repeating (h)-(j) until all waveforms in the waveform array are plotted.

42.   (Currently amended) An apparatus for displaying physiological patient data from a cyclic physiological waveform, said apparatus comprising:

a display; and

a means for producing a <u>colorized</u> three dimensional representation of physiological patient data from ~~the~~ <u>a</u> cyclic physiological waveform, the physiological patient data including a plurality of data points, each data point having an amplitude representing a value of a physiological parameter <u>and being assigned a first color when the amplitude is in a first range, a second color when the amplitude is in a second range, and a third color when the amplitude is in a third range, the first color, the second color, and the third color all being different colors</u>.

43.   (Original) An apparatus as set forth in claim 42, and further comprising a patient monitor device as a source of physiological patient data.

44.   (Original) An apparatus as set forth in claim 43, wherein the patient monitor device includes a transducer for acquiring the physiological patient data from a patient.

45.   (Original) An apparatus as set forth in claim 43, wherein the patient monitor device is a Holter monitor.

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46.   (Original) An apparatus as set forth in claim 43, wherein the patient monitor device is a stress-testing monitor.

47.   (Currently amended) An apparatus as set forth in claim 42, wherein the means for producing a <u>colorized</u> three dimensional representation includes storing the physiological data.

48.   (Original) An apparatus as set forth in claim 47, wherein the physiological patient data is stored in a memory array.

49.   (Currently amended) An apparatus as set forth in claim 48, <u>wherein the data points represent a plurality of waveforms, wherein each waveform represents at least one cycle of the cyclic physiological waveform, and</u> wherein the memory array is a waveform array.

50.   (Currently amended) An apparatus as set forth in claim 42, wherein the display is a black and white display capable of displaying/generating shades of gray in between black and white <u>wherein the first color is a first shade of gray, wherein the second color is a second shade of gray, and wherein the third color is a third shade of gray</u>..

51.   (Original) An apparatus as set forth in claim 42 wherein the display is a red-blue-green color display.

52.   (Currently amended) An apparatus as set forth in claim 42, <u>wherein the means is further configured to assign each data point an X, Y, Z coordinate, and</u> wherein the display has a plurality of pixels for displaying the respective coordinates.

53.   (Currently amended) An apparatus as set forth in claim 42, wherein the means for producing a <u>colorized</u> three dimensional representation includes animating the three dimensional representation for analysis of the three dimensional representation.

54.   (Currently amended) An apparatus as set forth in claim 42, wherein the means for producing a <u>colorized</u> three dimensional representation includes receiving physiological data.

55.   (Currently amended) An apparatus as set forth in claim 42, wherein the means for producing a <u>colorized</u> three dimensional representation includes parsing the physiological data.

56.   (Currently amended) An apparatus as set forth in claim 55, where in the physiological data is parsed into a series of waveforms<u>, and wherein each waveform represents at least one cycle of the cyclic physiological waveform</u>.

57.   (Currently amended) An apparatus as set forth in claim 56, wherein the series of waveforms are median waveforms<u>, and wherein each median waveform represents a plurality of cycles of the cyclic physiological waveform</u>.

58.   (Currently amended) An apparatus as set forth in claim 42, wherein the means for producing a <u>colorized</u> three dimensional representation includes generating a waveform display on the display.

59.   (Original) An apparatus as set forth in claim 58, wherein the waveform display places the data points at respective pixels on the display.

60.   (Previously added) A method as set forth in claim 1, wherein the amplitude of the physiological patient data relates to an amplitude of the cyclic physiological waveform.

61.   (Previously added) A method as set forth in claim 1, wherein the amplitude of the physiological patient data is an amplitude of the cyclic physiological waveform.

62.   (Previously added) A method as set forth in claim 23, wherein the cyclic physiological waveform represents the physiological parameter.

63.   (Previously added) A method as set forth in claim 42, wherein the cyclic physiological waveform represents the physiological parameter.

Interview Summary

This Interview Summary is further to the Examiner's Interview between Examiner Tam Tran, Supervisor Matthew Bella, and Applicants' Representative Chad W. Shea (Reg. No. 48,470) on February 12, 2004.

In the Interview, the 35 U.S.C. § 102 (e) rejections of claims 1-63 based on U.S. Patent No. 5,361,776 ("Samuelson") as discussed in paragraphs 2-15 of the Office action dated December 15, 2003 were discussed. No final agreement regarding the patentability of the claims was reached. Details of the interview are set forth below.

During the interview, Applicants submited that Samuelson does not disclose the display of physiological patient data from a cyclic physiological waveform as suggested in the Office action, but instead discloses the display of measured impedance values that result from the application of interrogating voltage pulses via a lead implanted in the patient's cardiovascular system. Supervisor Bella informed Applicants that without further limitation, the phrase "physiological patient data from a cyclic physiological waveform" as used in the claims would be given a broad definition that includes the data of Samuelson. Applicants conceded that such definition was likely proper without further definition.

Applicants also raised questions regarding the colorization of the three dimensional representation by directing Supervisor Bella's attention to FIGS. 3-7 of the present application. Supervisor Bella stated that the claim limitations (e.g., those found in claim 13) do not require more than one color, therefore, broadly speaking, Samuelson discloses the colorization of each data point using a single black color.

Applicants also submitted that in Applicants opinion a number of the dependent features were not shown or described in Samuelson and that because the rejections were based on 35 U.S.C. § 102(e), each limitation must be found in Samuelson. Supervisor Bella suggested that some claim terms (e.g., median waveform) could use further definition to clarify what was meant.